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NOT FOR PUBLICATION

INTERMOUNTAIN FOREST AND RANGE EXPERIMENT STATION  
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Spruce Budworm Situation  
in  
Southern Idaho  
1958

By  
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Prepared by  
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## SPRUCE BUDWORM SITUATION

IN

SOUTHERN IDAHO

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### INTRODUCTION

Since 1952 infestations of spruce budworm<sup>1/</sup> have increased in extent in southern Idaho. However, 1958 was the first year during which appreciable increases in severity in damage were restricted to certain areas. Control projects conducted in 1955, 1956, and 1957 covered a total of 2,029,747 acres of Douglas-fir, true firs, and spruce.

No control project was recommended in 1958. This was due in part to uncertainties as to significance of existing spider mite infestations in sprayed areas, and the fact that most of the budworm infestations were relatively new and tree killing was not imminent.

### SURVEY METHODS

The aerial and ground surveys were again coordinated to better evaluate budworm damage. The purpose of these surveys was to locate current budworm-damaged areas, possible reinfestations within sprayed areas, and to determine the severity of defoliation. The aerial phase provided all detection and a visual estimate of damage intensity for the inaccessible areas, while the ground phase utilized sampling methods based on the sequential plan.

To assess damages 40 one-acre plots, established and sampled as part of the budworm population-damage study, were utilized during the ground survey. In addition, sampling for parasites of mature larvae and pupae was accomplished this year as part of the survey. More of this type of information is needed and planned in order to better evaluate the true picture of a budworm infestation.

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1/Choristoneura fumiferana (Clem.)

## RESULTS

Again, as in 1957, total acreage infested by budworm does not appear to be lessening in southern Idaho. The Challis, Salmon, and Targhee National Forests show a decided increase both in area and severity of damage, while the Boise and Payette Forests a marked decrease, and the Sawtooth remained static. Because of differences in character of the various infestations the situation on each forest will be discussed separately.

### Boise National Forest

The 1957 survey showed approximately 39,000 acres infested with budworm. This year's infestations are estimated to total 33,700 acres. No new infestations of any size were noted, though several patches of light defoliation were observed.

Area A. Coulter Summit--10,000 acres. This infestation has been noticeable for about 4 years. The severity of defoliation increased annually until this year when survey revealed that between 25-50 percent of the current growth was defoliated within this area. The acreage affected has remained rather static in size for the past 3 years. Sampling showed 30 percent parasitism of the early instar larvae and 14 percent parasitism of the mature larval and pupal populations. This degree of parasitism is not considered great enough to effect satisfactory reduction in population levels.

A budworm research plot was established within this area and intensive sampling studies were conducted for the past 2 years.

Area B. Sulphur Creek--17,000 acres. This is a reinfestation within the area sprayed in 1956 for the control of spruce budworm. Damage ranges from medium defoliation around Morehead Mountain to light defoliation along Boundary Creek. The acreage affected did not increase during this, its second year of existence.

Area C. Miscellaneous and Isolated Spots--6,700 acres. These spots are mentioned only for the record. They are small and the extent and degree of damage does not warrant concern.

### Challis National Forest

The Challis National Forest displayed a most drastic increase in area affected by the spruce budworm. In 1956 only 22,250 acres were reported; in 1957, 18,200 acres, and this year there were 103,500 acres infested. During the control projects of 1956 and 1957 some 30,990 acres were sprayed that were adjacent to larger areas of infestation on bordering forests (Boise and Payette).

The 1958 surveys revealed approximately 36,000 acres of light degree of defoliation, 60,000 acres of medium and 7,500 acres of heavy. Because of inaccessibility no ground surveys were made.

Area D. Middle Fork of the Salmon River--25,000 acres. It is felt that this infestation could have arisen because of reinfestation across the river within Sulphur Creek (Boise N.F.). However, the west face of Big Soldier Mountain was sprayed in 1956 and a reinfestation here could also have contributed to the increase. The intensity of defoliation is rated as medium.

Area E. Rapid River--86,000 acres. This infestation has increased from 3,700 acres, as reported in 1957, to its present size. However, the overall intensity of defoliation decreased from medium to light.

Area F. Little Soldier Creek--5,000 acres. This small hot spot was rated as one of heavy defoliation. Although aerial observation could not detect intervening defoliation, this area is probably contiguous to Areas E and G.

Area G. Loon Creek--35,000 acres. Loon Creek was first reported as showing budworm defoliation in 1957 with two spot infestations of light to medium defoliation totaling 6,400 acres. In 1958 Loon Creek contained 35,000 acres of infestation of medium defoliation.

Area H. Indian Creek--2,500 acres. This is a new isolated infestation rated as suffering heavy defoliation.

#### Payette National Forest

The Payette National Forest is relatively free of any large budworm infestations. Four small areas were reported totaling 14,850 acres. The Bear Creek Point and Pilot Peak areas were "hot-spotted" during the 1957 control project, but as is often the case with this type of approach, reinfestation has occurred. In view of total acres sprayed for budworm on the Payette Forest (624,293) this small acreage of infestation is remarkable. It should be sufficient to only list these areas.

Area I. Willow Creek--2,500 acres - light

Area J. Rugged Creek--1,250 acres - light

Area K. Bear Creek Point--8,000 acres - medium

Area L. Pilot Peak--3,100 acres - medium.

### Salmon National Forest

Of the 1,020,350 budworm infested acres in southern Idaho, almost one-half of these lie within the Salmon National Forest. The 478,000 acres located this year consists of 100,000 acres heavily defoliated, 222,000 medium, and 156,000 light. This total shows an increase of approximately 200,000 acres over the amount recorded in 1957. In the area of expansion, however, defoliation was light. The 100,000 acres of heavy defoliation is the area where reinfestation occurred since the 1956 control project. This area also contains approximately 10,000 acres of spider mite damage.

Area M. Yellowjacket Creek--80,000 acres. Only 49,800 acres were infested in 1957. Thus an increase of over 30,000 acres occurred in 1958. The entire area suffered between 25-50 percent defoliation of the current growth.

Area N. Porphyry Creek--8,000 acres. This area remained static in size, but damage decreased from that in 1957. Both Douglas-fir and alpine fir showed less than 25 percent defoliation of the current growth. Samples of the mature larval and pupal population were taken and parasitism of these stages averaged 38 percent. This degree of parasitism, though derived from late instars only, could be the retarding factor in this infestation that failed to expand.

Area O. Big Deer Creek--42,000 acres. This area also failed to expand in size, but appeared to be reduced in severity of defoliation. The heaviest defoliation still occurs in Deer and Clear Creeks--sampling showed between 50-75 percent of the current buds eaten, tapering off to less than 25 percent near Blackbird Mountain. Parasitism of the mature larval and pupal population within Big Deer Creek averaged 20 percent.

Area P. Salmon River--312,000 acres. The infestation along the Salmon River showed the greatest expansion in size, yet the severity of damage remained the same. The new infestations resulted in only light (less than 25 percent) defoliation of alpine fir, but greater defoliation of Douglas-fir. For example, along the creek bottoms, Fourth-of-July Creek showed between 25-50 percent of the new buds eaten, and Carmen Creek 75-90 percent, while the ridge-top alpine fir suffered less than 25 percent defoliation on Sheep and Fourth-of-July Creeks, and between 25-50 percent near Gibbons Pass. Parasitism of the mature budworm larval and pupal populations within this eastward expansion reached 35 percent.

In 1957, 183,400 acres were reported as being infested: 91,700 acres were noted as medium defoliation and 91,700 as heavy. The 1958 surveys revealed 312,000 acres infested with budworm: 100,000 acres of heavy defoliation, 122,000 acres of medium, and 90,000 acres of light. Within the 100,000 acres of heavy defoliation there are approximately 10,000 acres of spider mite damage, all of which were sprayed in 1956.

The data from the 1956 control project reveals that good results were accomplished. Budworm larval mortality ranged from 80.7 to 100 percent and averaged 94.7 percent. Sampling for mortality and spray coverage during the project is considered to have been adequate since only one spray block failed to receive either a mortality or spray deposit card check.

Area Q. Lemhi River--36,000 acres. Infestations within Lemhi Valley are all new, lightly defoliated, and exist as small isolated pockets.

#### Sawtooth National Forest

The first expansion in 3 years in area affected by the spruce budworm on the Sawtooth National Forest occurred in 1957. This increase continued in 1958, reaching a total of 140,300 acres. However, the damage trend continued downward in 1958. New infestations showed less than 25 percent of the current growth defoliated and old infestations between 25-50 percent. Most of the increase in size occurred through expansion of perimeters of older infestations.

Area R. Warm Springs Creek--5,300 acres. This area, though bearing the same name, is a different infestation than the one reported in 1957. This is a new infestation with less than 25 percent defoliation of the current growth.

Area S. South Fork of the Boise River--88,000 acres. This area, originating in 1949, has fluctuated annually in budworm population and resultant damage until 1957. At that time the area affected increased some 33,000 acres while the severity of damage decreased from heavy to medium defoliation. During 1958 this trend continued; an increase of 18,000 acres affected and a decrease in severity of damage to an overall estimate of light (less than 25 percent) defoliation. One hot spot on Fleck Summit showed between 50-75 percent defoliation of the current growth.

Sampling for parasites showed 5 percent parasitism of the early larval population, which averaged 1 larva per 15-inch twig and 36 percent parasitism of the mature larval and pupal populations which averaged only 0.12 larva per 15-inch twig.

Area T. Ross Fork-Paradise Creeks--37,000 acres. This area increased approximately 7,000 acres in 1958, but remained the same in degree of defoliation--light.

Area U. King-of-the-West Creek--3,000 acres. This infestation began in 1957 and was chosen as one of the areas for the budworm population-damage study.

The area affected has not increased and sampling showed less than 25 percent of the current growth to have been eaten by the budworm. Parasitism averaged 17 percent of the early larval population, which averaged 0.47 larva per 15-inch twig and 11 percent of the mature larval and pupal population which averaged 0.15 individuals per 15-inch twig.

Area V. Big Wood River--7,000 acres. This new infestation was lightly defoliated. It is isolated and warrants, at this time, only the mention of its existence.

#### Targhee National Forest

In 1956 some 76,000 acres affected by the budworm were reported and recommended for control. This area plus 42,365 more were sprayed in 1957 with good results. The 1958 aerial and ground surveys revealed approximately 204,365 acres infested with budworm. These infestations are quite variable in intensity of damage, with approximately 86,000 acres of new infestations of which only 4,000 acres were noted as being heavily defoliated.

Area W. Pleasant Valley--31,000 acres. This is a reinfestation since the 1957 control project. Damage is light and the occurrence sporadic.

Area X. Signal Mountain-Henry's Lake--173,365 acres.

For convenience of reporting this area will be broken down into subunits: Signal Mountain contains a reinfestation of approximately 45,000 acres, noted as lightly damaged. Camas Creek-Meyers Creek is actually a continuation of the Signal Mountain subunit and has the same history. However, the degree of defoliation was rated as medium within this subunit covering approximately 42,365 acres. The west side of Henry's Lake was flown only and received no ground appraisal. This is a new infestation rated as lightly defoliated and infestations are quite sporadic. The east side of Henry's Lake contains two spots of severe defoliation: Dry Creek (2,500 acres) and Two Top Mountain (1,500 acres). These two areas have been infested for the past two years. The remainder of approximately 29,250 acres were rated as medium in defoliation.

These are all young infestations causing no concern of imminent tree killing. However, the aggressiveness of the Dry Creek and Two Top Mountain infestations warrants vigilance and a closer appraisal in the future of the biological factors involved.

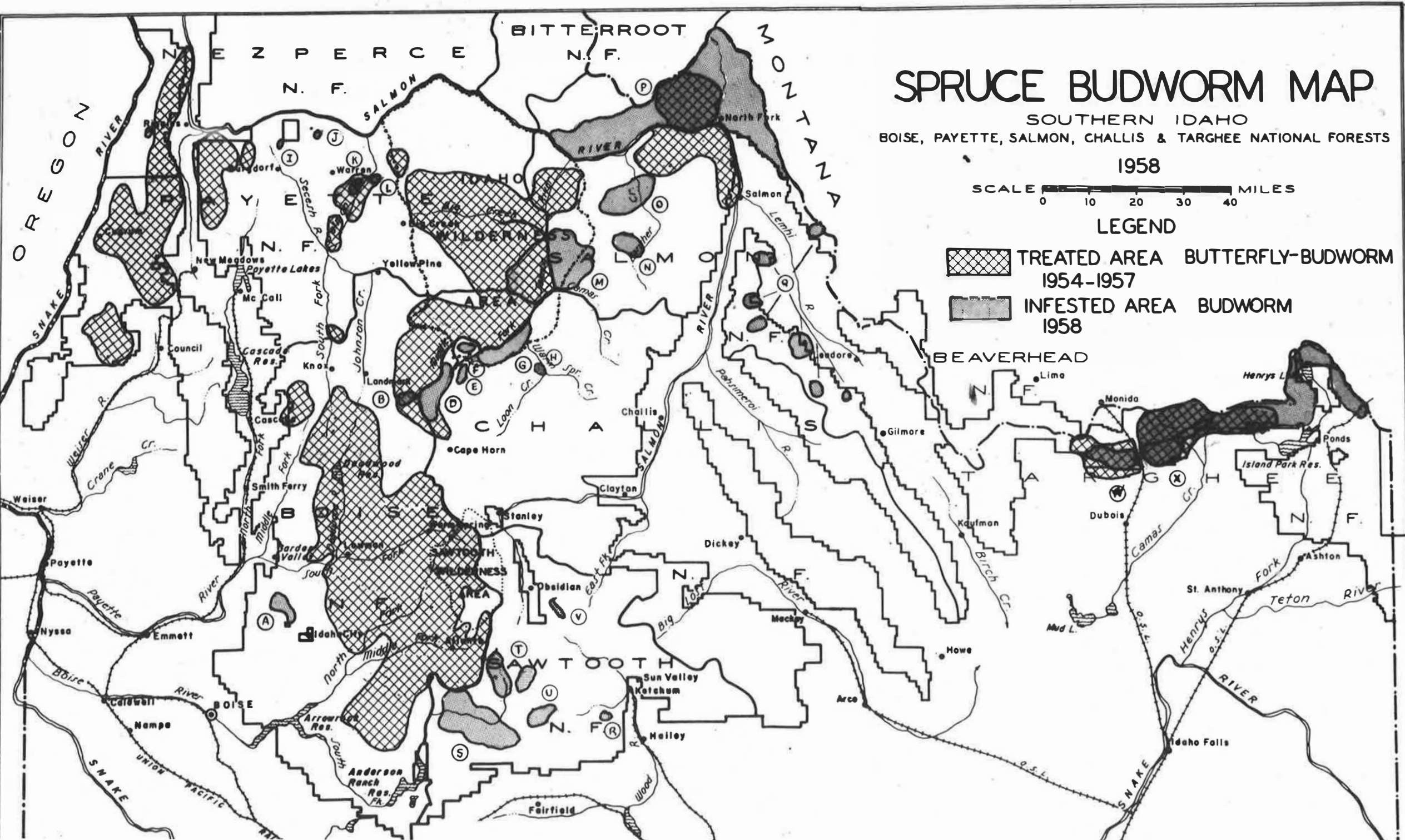
Table 1. Areas, acreages, and severity of spruce budworm defoliation in  
southern Idaho - 1958

National Forest	Area	Acreage of defoliation			Forest acreage
		Light	Medium	Heavy	
Boise	A-Coulter Summit	---	10,000	---	10,000 (Static)
	B-Sulphur Creek	---	17,000	---	17,000 (Static)
	C-Misc.& Isolated spots	6,700	---	---	6,700 (Incr.)
	Totals	6,700	27,000	---	33,700
Challis	D-Mid.Fk.Salmon River	---	25,000	---	25,000 (Incr.)
	E-Rapid River	36,000	---	---	36,000 (Incr.)
	F-Little Soldier Cr.	---	---	5,000	5,000 (Incr.)
	G-Loon Creek	---	35,000	---	35,000 (Incr.)
	H-Indian Creek	---	---	2,500	2,500 (Incr.)
	Totals	36,000	60,000	7,500	103,500
Payette	I-Willow Creek	2,500	---	---	2,500 (Incr.)
	J-Rugged Creek	1,250	---	---	1,250 (Incr.)
	K-Bear Creek Point	---	8,000	---	8,000 (Incr.)
	L-Pilot Peak	---	3,100	---	3,100 (Incr.)
	Totals	3,750	11,100	---	14,850
Salmon	M-Yellowjacket Creek	30,000	50,000	---	80,000 (Incr.)
	N-Porphry Creek	---	8,000	---	8,000 (Static)
	O-Big Deer Creek	---	42,000	---	42,000 (Static)
	P-Salmon River	90,000	122,000	100,000	312,000 (Incr.)
	Q-Lemhi River	36,000	---	---	36,000 (Incr.)
	Totals	156,000	222,000	100,000	478,000
Sawtooth	R-Warm Springs Cr.	5,300	---	---	5,300 (Static)
	S-So.Fk.Boise River	77,500	10,500	---	88,000 (Incr.)
	T-Ross Fk.-Paradise	37,000	---	---	37,000 (Incr.)
	U-King-of-the-West	3,000	---	---	3,000 (Incr.)
	V-Big Wood River	7,000	---	---	7,000 (Incr.)
	Totals	129,800	10,500	---	140,300



Table 1 (Cont'd.)

National Forest	Area	Acreage of defoliation			Forest acreage
		Light	Medium	Heavy	
Targhee	W-Pleasant Valley	31,000	----	---	31,000 (Static)
	X-Signal Mtn.-				
	Henry's Lake	97,750	71,615	4,000	173,365 (Incr.)
	-Signal Mtn.	45,000	----	---	
	-Camas-Meyers	---	42,365	---	
	-W.Henry's Lake	52,750	---	---	
	-E.Henry's Lake	---	29,250	4,000	
	Totals	128,750	71,615	4,000	204,365
Totals for Southern Idaho		461,000	402,215	111,500	974,715





# SPRUCE BUDWORM MAP

SOUTHERN IDAHO  
BOISE, PAYETTE, SALMON, CHALLIS & TARGHEE NATIONAL FORESTS

1958

SCALE 0 10 20 30 40 MILES

## LEGEND

-  TREATED AREA BUTTERFLY-BUDWORM 1954-1957
-  INFESTED AREA BUDWORM 1958